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10/668,195	09/24/2003	Tatsuyuki Kuki	117276	4108

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EXAMINER

GREENE, JASON M

ART UNIT	PAPER NUMBER
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1724

DATE MAILED: 07/27/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/668,195

Applicant(s)

KUKI ET AL.

Examiner

Jason M. Greene

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-24 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 1,2,4-10 and 19 is/are rejected.
- 7) ☒ Claim(s) 3,11-18 and 20-22 is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 24 September 2003 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. ____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date 12/22/03;2/19/04.
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. ____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: ____.

DETAILED ACTION

Priority

1. Receipt is acknowledged of papers submitted under 35 U.S.C. 119(a)-(d), which papers have been placed of record in the file.

Drawings

2. Figures 6a and 6b should be designated by a legend such as --Prior Art-- because only that which is old is illustrated. See MPEP § 608.02(g). Corrected drawings in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. The replacement sheet(s) should be labeled "Replacement Sheet" in the page header (as per 37 CFR 1.84(c)) so as not to obstruct any portion of the drawing figures. If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

Claims

3. With regard to claims 1, 10 and 23, the Examiner suggests Applicants change the word "to" in lines 2, 3 and 7, respectively, to the word "in" to improve the readability

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of the claim language. The Examiner suggests Applicants change the phrase "a honeycomb structure" in lines 3, 3 and bridging lines 7-8, respectively, to read as "the honeycomb structure" to clarify antecedent basis. The Examiner suggests Applicants insert the word "from" at the beginning of line 5 and between the words "channels" and "one" in lines 4 and 9, respectively, to improve the readability of the claim language. The Examiner suggests Applicants rewrite the phrase "is smaller between" bridging lines 12-13, in line 11 and bridging lines 15-16, respectively, as "is the lesser of" to improve the clarity and precision of the claim language.

4. With regard to claim 2, the Examiner suggests Applicants rewrite the phrase "is smaller between" in line 3 as "is the lesser of" to improve the clarity and precision of the claim language.

5. With regard to claim 8, the Examiner has interpreted the phrase "wherein a sectional shape of the through channel is any one of a triangular shape, a quadrangular shape, a hexagonal shape, and a circular shape" to mean that each of the through channels has one of the recited sectional shapes along its entire axial length.

6. With regard to claim 12, the Examiner has interpreted the phrase "wherein the fluid to be sprayed to the ceramic paste is any of compressed air, steam, and water" to mean that the fluid can be any of the recited fluids or a combination thereof. If this interpretation is correct, the Examiner suggests Applicants rewrite the phrase as

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"wherein the fluid to be sprayed to the ceramic paste is selected from the group consisting of compressed air, steam, water and combinations thereof" to improve the clarity and precision of the claim language.

7. With regard to claim 13, the Examiner suggests Applicants rewrite the word "heat" in line 7 as "heating", the phrase "to melt to flow out" in line 8 as "to melt and flow out", and the word "remove" in line 10 as the phrase "be removed" to improve the readability of the claim language.

8. With regard to claim 14, the Examiner has interpreted the phrase "a wax material selected from the group consisting of paraffins, or a plastic resin" to mean that the wax material can be either of the recited waxes or a combination thereof. If this interpretation is correct, the Examiner suggests Applicants rewrite the phrase as "a wax material selected from the group consisting of paraffins, a plastic resin, and combinations thereof" to improve the clarity and precision of the claim language.

9. With regard to claim 15, the Examiner has interpreted the phrase "material selected from the group consisting of paraffins, a plastic resin, or wood" to mean that the combustible material can be any of the recited materials or a combination thereof. If this interpretation is correct, the Examiner suggests Applicants rewrite the phrase as "material selected from the group consisting of paraffins, a plastic resin, wood, and combinations thereof" to improve the clarity and precision of the claim language.

10. With regard to claim 20, the Examiner has interpreted the phrase "disposing a reinforced portion densified as compared with a portion other than the end in the end" in lines 5-6 to mean that the end of the honeycomb structure is formed as a reinforced and densified portion as compared to portions of the honeycomb structure other than the end.

11. With regard to claims 22, the Examiner has interpreted the phrase "a pre-calcined calcined material" to mean that the honeycomb structure is calcined prior to attaching the mixed solution and calcined subsequent to attaching the mixed solution.

Claim Rejections - 35 USC § 112

12. The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

13. Claim 19 is rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention.

Claim 19 recites the method of claim 10 further comprising attaching a solution comprising a melting point lowering component and a solvent to the end of the honeycomb structure and subsequently calcining the honeycomb structure such that a through-hole is formed. However, claim 10, from which claim 19 depends, recites the through-hole being formed by processing a ceramic paste injected into predetermined channels.

In instant paragraphs [0037] to [0043] and [0044] to [0046], Applicants teach forming the through-hole by processing a ceramic paste and forming the through-hole by calcining a solution treated honeycomb being mutually exclusive methods for forming the through-hole. In other words, Applicants do not teach a method according to claim 19 wherein both methods are used to form the through-holes in a honeycomb structure. The Examiner notes that it appears as though claim 19 should be an independent claim reciting the preamble of claim 10 and the instant additional limitations. Accordingly, the Examiner has treated claim 19 as though claim 10 only recited the preamble.

14. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

15. Claims 7, 15 and 23 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Regarding claims 7 and 23, the phrase "such as" renders the claim indefinite because it is unclear whether the limitations following the phrase are part of the claimed invention. See MPEP § 2173.05(d). Claim 7 recites the phrase "such as" in lines 3-4 and claim 23 recites the phrase in lines 4 and 28.

Claim 15 recites the combustible material being a wax material selected from a group consisting of wood. However, since wood is not a wax material, it is unclear what combustible materials the claim is intended to encompass. For examination purposes, the Examiner has assumed Applicants intended the combustible materials to consist of the materials recited in lines 3-4. Accordingly, the Examiner suggests Applicants delete the phrase "a wax material" in line 2.

Claim Rejections - 35 USC § 102

16. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

17. Claims 1, 2, 7, 8 and 9 are rejected under 35 U.S.C. 102(e) as being anticipated by Ishihara et al. '248.

With regard to claims 1 and 2, Ishihara et al. '248 discloses a honeycomb structure (1) comprising a plurality of through channels (10) extending in an axial direction of the honeycomb structure, porous partition walls (11) separating the through channels from one another, and plugging portions (2,3), said plugging portions plugging predetermined through channels at one end and the rest of the through channels at the other end opposite to the plugged end of the predetermined through channels, wherein a through-hole (30) is formed in at least a part of the plugging portion in Figs. 1-3 and 5(a) and col. 4, line 61 to col. 5, line 50.

While Ishihara et al. '248 does not explicitly disclose the diameter of the through-hole, the diameter can be calculated from the disclosed cell structure and plug opening rate. Ishihara et al. '248 teaches the plugging portions having a plug opening rate of 5-80% and the honeycomb having a cell size (structure) of 12 mil/300 meshes (cpsi) in col. 5, lines 16-35. The Examiner notes that the phrase "12 mil (300 meshes)" means that the partition walls have a thickness of 12 mils and the honeycomb has a cell density of 300 cells per square inch (cpsi). From the cell density, the number of cells per linear inch can be determined as the square root of the cell density to be $(300 \text{ cpsi})^{1/2} = 17.32$ cells/inch (0.682 cells/mm). From this, the cell pitch (center-to-center distance) can be calculated to be $1/0.682 \text{ cells/mm} = 1.466 \text{ mm}$. From the partition wall thickness, the cell width can be calculated to be $1.466 \text{ mm} - 0.305 \text{ mm (12 mils)} = 1.16 \text{ mm}$. Since the

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channels are square in shape (see Fig. 1), the cross sectional area of the channels can be calculated from the cell width to be $(1.16 \text{ mm})^2 = 1.35 \text{ mm}^2$. Ishihara et al. '248 teaches the plug opening rate being 80 percent in col. 5, lines 32-33. From the equation in col. 5, lines 33-34, a plug opening rate of 80 percent equates to the through-hole having a cross-sectional area equal to 20 percent of the cross-sectional area of the channel. Thus, the cross-sectional area of the through-hole is $0.2 * 1.35 \text{ mm}^2 = 0.270 \text{ mm}^2$. Therefore, the radius of the through-hole can be calculated as $(0.270 \text{ mm}^2/\pi)^{1/2} = 0.293 \text{ mm}$ and the diameter can be determined to be $2 * 0.293 \text{ mm} = 0.586 \text{ mm}$, which is more than 0.4 mm. Since the diameter of an inscribed circle of the through channel is equal to the width of the channel, 60% of the diameter of the inscribed circle can be calculated as $0.6 * 1.16 \text{ mm} = 0.697 \text{ mm}$, which is less than 0.8 mm and greater than the calculated diameter of the through-hole.

With regard to claim 7, Ishihara et al. '248 discloses the honeycomb structure being used as a filter for trapping, collecting and removing particulate materials included in dust-containing fluids including exhaust gas of an internal combustion engine by virtue of filterability (porosity) of the partition walls in col. 2, lines 45-67.

With regard to claim 8, Ishihara et al. '248 discloses a sectional shape of the through channels being a quadrangular shape (square) in Fig. 1.

With regard to claim 9, the ceramic material disclosed by Ishihara et al. '248 in col. 5, lines 58-64 will form a material containing cordierite as a major crystal phase after firing. The Examiner notes that the transitional phrase "containing" in line 3 has been interpreted as being open-ended.

18. Claims 23 and 24 are rejected under 35 U.S.C. 102(e) as being anticipated by Ishihara et al. '248.

Ishihara et al. '248 discloses an exhaust gas purification system for trapping, collecting and removing particulate materials containing carbon as a major component included in dust-containing exhaust gas of an internal combustion engine, the system comprising a honeycomb structure (1) comprising a plurality of through channels (10) extending in an axial direction of the honeycomb structure, porous partition walls (11) separating the through channels from one another, and plugging portions (2,3), said plugging portions plugging predetermined through channels at one end and the rest of the through channels at the other end opposite to the plugged end of the predetermined through channels, wherein a through-hole (30) is formed in at least a part of the plugging portion, and a diameter of the through-hole is 0.586 mm (see above discussion), which is used as a filter for trapping and collecting the particulate materials, a heating means (an electric heater) for burning the particulate materials trapped and collected by the honeycomb structure to regenerate a filtering capacity, wherein a through-hole plugging portion of the honeycomb structure is such a structure (diameter of the through-hole) that the honeycomb structure is closed (by closing the through-

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hole) by the trapping, collecting and depositing of the particulate materials, that the closed through-hole opens by the burning of the particulate materials by heating at the time of the regeneration, and that at least some of unburnt materials deposited in the honeycomb structure are discharged from the honeycomb structure with the flow of the dust-containing fluids when the through-hole opens in Figs. 1-3 and 5(a), col. 4, line 61 to col. 5, line 50 and col. 6, line 52 to col. 7, line 17. The Examiner notes that since the through-hole of Ishihara et al. '248 has the same diameter as the instantly claimed honeycomb structure, the through-hole will be closed by the trapping, collecting and depositing of the particulate materials.

Claim Rejections - 35 USC § 103

19. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

20. Claim 6 is rejected under 35 U.S.C. 103(a) as being unpatentable over Ishihara et al. '248 in view of Ishihara et al. '107.

Ishihara et al. '248 does not disclose an oxidation catalyst being carried on at least the plugging portion in which the through-hole is formed, or in the plugging portion in which the through-hole is formed and in the vicinity thereof.

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Ishihara et al. '107 teaches a providing an oxidation catalyst on the plugging portions (2) and the walls (11) of a honeycomb structure (1) in Figs. 1 and 2 and col. 3, lines 10-14.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to incorporate the oxidation catalyst of Ishihara et al. '107 into the plugging portion of Ishihara et al. '248 to allow captured particulate matter to be burned, as suggested by Ishihara et al. '107 in col. 3, lines 10-14.

21. Claims 1, 2, 4 and 5 are rejected under 35 U.S.C. 103(a) as being unpatentable over Japanese Unexamined Utility Model Publication JP 58-72414 in view of Ishihara et al. '248.

With regard to claims 1 and 2, JP 58-72414 discloses a honeycomb structure (4) comprising a plurality of through channels (8a,8b) extending in an axial direction of the honeycomb structure, porous partition walls (7) separating the through channels from one another, and plugging portions (9a,9b), said plugging portions plugging predetermined through channels at one end and the rest of the through channels at the other end opposite to the plugged end of the predetermined through channels, wherein a through-hole (11) is formed in at least a part of the plugging portion in Figs. 1-7 and lines 1-12 of the partial English language translation.

JP 58-72414 does not disclose the diameter of the through-hole.

As noted above, Ishihara et al. '248 discloses a similar honeycomb structure (1) having a cell structure and plug opening rate such that the diameter of the through-hole (30) is 0.586 mm in Figs. 1-3 and 5(a) and col. 4, line 61 to col. 5, line 50.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to incorporate the cell structure and plug opening rate of Ishihara et al. '248 into the honeycomb structure of JP 58-72414 to decrease the pressure loss caused by the plugs without overly reducing filtration efficiency, as suggested by Ishihara et al. '248 in col. 3, lines 33-46.

With regard to claims 4 and 5, JP 58-72414 discloses the sectional shape of the through-hole (9a) in a through direction of the through-hole being a tapered shape such that each sectional area of the through-hole formed in a plugging portion of the honeycomb structure is substantially non-uniform from each other in Figs. 7.

22. Claim 10 is rejected under 35 U.S.C. 103(a) as being unpatentable over Ishihara et al. '248 in view of Pitcher, Jr.

Ishihara et al. '248 discloses a method for manufacturing a honeycomb structure (1) comprising a plurality of through channels (10) extending in an axial direction of the honeycomb structure, porous partition walls (11) separating the through channels from one another, and plugging portions (2,3), said plugging portions plugging predetermined through channels at one end and the rest of the through channels at the other end opposite to the plugged end of the predetermined through channels, wherein a through-

hole (30) is formed in at least a part of the plugging portion, and a diameter of the through-hole is 0.586 mm (see above discussion), the method comprising the steps of flowing a ceramic slurry forming a plugging portion into predetermined through channels by dipping one end face of the honeycomb structure into a ceramic slurry, and subsequently subjecting the plugging portion formed from the ceramic slurry to a processing (drilling) to form a through-hole in the plugging portion in Figs. 1-3 and 5(a) and col. 4, line 61 to col. 7, line 55.

Ishihara et al. '248 does not disclose the plugging portion being formed from a ceramic paste injected into predetermined through channels from one of their end faces.

Pitcher, Jr. discloses a similar method for manufacturing a honeycomb structure comprising injecting a ceramic paste forming a plugging portion (8,11) into predetermined through channels from one of their end faces in Fig. 2 and col. 5, lines 47-64.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to substitute the ceramic paste of Pitcher, Jr. for the ceramic slurry of Ishihara et al. '248 to reduce drying shrinkage of the plugging portion and solvent swelling of the honeycomb, as is well known in the art. Specifically, since a ceramic slurry contains a higher weight percentage of liquid solvent than a ceramic paste, plugging portions formed from a ceramic slurry will shrink to a greater degree as the honeycomb structure is dried and fired, which results in lower mechanical strength and lower reliability of the plugging portions. Similarly, dipping the honeycomb structure in a ceramic slurry will cause the porous partition walls to absorb more liquid solvent than

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injecting a ceramic paste into the predetermined channels, thereby reducing the mechanical strength of the honeycomb structure.

Allowable Subject Matter

23. Claim 3 and 11-18 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

24. Claim 19 would be allowable if rewritten to overcome the rejection(s) under 35 U.S.C. 112, 2nd paragraph, set forth in this Office action.

25. Claim 20-22 are objected to as being dependent upon a rejected base claim, but would be allowable if claim 19 were rewritten to overcome the rejection(s) under 35 U.S.C. 112, 2nd paragraph, set forth in this Office action

26. The following is a statement of reasons for the indication of allowable subject matter:

With regard to claim 3, Ishihara et al. '248 discloses an embodiment of the honeycomb structure wherein the plugging portions in the vicinity of an outer peripheral portion of the honeycomb structure have through-holes while the plugging portions in a

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central portion of the honeycomb structure are full plugs lacking through-holes in col. 8, lines 33-39.

The prior art made of record does not teach or fairly suggest the honeycomb structure of claim 1 wherein a sectional area of the through-hole of the plugging portion in the vicinity of an outer peripheral portion of the honeycomb structure is larger than that of the through-hole of the plugging portion in a central portion of the honeycomb structure.

With regard to claims 11-18, Ishihara et al. '248 discloses the processing to form a through-hole in the plugging portion being to drill a hole out after drying or to press a thin bar-shaped jig through the plugging portion after partially drying the ceramic slurry in col. 7, lines 51-55.

With regard to claims 11 and 12, the prior art made of record does not teach or fairly suggest the method of claim 10, wherein the processing to form a through-hole in the plugging portion is to spray a fluid onto the ceramic paste injected.

With regard to claims 13-15, the prior art made of record does not teach or fairly suggest the method of claim 10, wherein the processing to form a through-hole in the plugging portion is to insert a rod-shaped thermoplastic organic material or a rod-shaped combustible material in the ceramic paste, when or after injecting the ceramic paste forming the plugging portion in the end of the through channel, and subsequently heating a resultant honeycomb structure to allow the rod-shaped thermoplastic organic material to melt and flow out therefrom, or to allow the rod-shaped combustible material

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to burn to be removed therefrom, so that a through-hole is formed in the plugging portion.

With regard to claim 16, the prior art made of record does not teach or fairly suggest the method of claim 10, wherein the processing to form a through-hole in the plugging portion is to press a drill jig including a plurality of protrusion attaches to a plate-like (plate shaped) base onto the ceramic paste injected to form a through-hole in the plugging portion.

With regard to claims 17 and 18, the prior art made of record does not teach or fairly suggest the method of claim 10, wherein the processing to form a through-hole in the plugging portion is to irradiate a part of the ceramic paste injected with a laser to form a through-hole in the plugging portion.

With regard to claims 19-22, Ishihara et al. '248 discloses a method for manufacturing a honeycomb structure (1) comprising a plurality of through channels (10) extending in an axial direction of the honeycomb structure, porous partition walls (11) separating the through channels from one another, and plugging portions (2,3), said plugging portions plugging predetermined through channels at one end and the rest of the through channels at the other end opposite to the plugged end of the predetermined through channels, wherein a through-hole (30) is formed in at least a part of the plugging portion, and a diameter of the through-hole is 0.586 mm (see above discussion), the method comprising the steps of mixing a ceramic material which forms cordierite upon firing into solvent to prepare a mixed solution, attaching the mixed

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solution to the end of the honeycomb structure of cordierite, and subsequently calcining the honeycomb structure to increase a thickness of a portion to which the mixed solution has been attached so that the plugging portion including a through-hole is formed in Figs. 1-3 and 5(a) and col. 4, line 61 to col. 7, line 55.

Ishihara et al. '248 does not disclose the method comprising mixing a melting point lowering component for lowering a melting point of cordierite into the solvent to prepare the mixed solution.

Kumazawa et al. discloses a method for manufacturing a honeycomb structure comprising mixing a melting point lowering component (glaze, talc, alumina, titanium oxide) for lowering a melting point of cordierite into solvent to prepare a mixed solution, attaching the mixed solution to the end of the honeycomb structure of cordierite, and subsequently calcining the honeycomb structure to increase a thickness of a portion to which the mixed solution has been attached in col. 4, line 1 to col. 8, line 26. However, the Kumazawa et al. reference is directed to improving the abrasion resistance of a catalyst carrier lacking plugging portions. Accordingly, Kumazawa et al. does not teach the calcining step forming plugging portions including a through-hole. Additionally, since Kumazawa et al. discloses the melting point lowering components increasing the coefficient of thermal expansion of the cordierite honeycomb structure by altering the stoichiometric composition, the reference teaches away from incorporating the components into the method of Ishihara et al. '248.

The prior art made of record does not teach or fairly suggest a method for manufacturing the honeycomb structure recited in the preamble of claim 10 comprising

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the step of mixing a melting point lowering component for lowering a melting point of cordierite into solvent to prepare a mixed solution.

Conclusion

27. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. The Ogawa et al., Tukao et al., Dimick et al., Vance et al., Nishimura et al., Kojima et al., Nakatani et al. and Fukuta et al. disclose similar honeycomb structures and methods for their manufacture. Ohno et al. recites the common terminology for specifying honeycomb cell structures in col. 2, lines 8-15 and col. 7, lines 18-25.


28. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jason M. Greene whose telephone number is (571) 272-1157. The examiner can normally be reached on Monday - Friday (9:00 AM to 5:30 PM).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Duane Smith can be reached on (571) 272-1166. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Jason M. Greene
Examiner
Art Unit 1724


7/22/05

jmg
July 22, 2005